DOCUMENT RESUME

ED 293 020 CG 020 668

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TITLE Coping with Adolescence: The Functions and Dysfunctions of Poor Achievement.
SPONS AGENCY National Inst. of Mental Health (DHHS), Rockville, MD.
PUB DATE 2 Jun 87
GRANT NIMH-MH-30252/38142
NOTE 20p.; Paper presented at the Biennial Meeting of the Society for Research in Child Development (Baltimore, MD, April 23-26, 1987).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Academic Achievement; *Adolescent Development; *Adolescents; Behavior Patterns; Behavior Problems; Elementary Secondary Education; Followup Studies; Longitudinal Studies; Preadolescents; Predictor Variables; *Self Concept; *Student Behavior

ABSTRACT

Adolescence may be conceptualized as a period of life that begins and ends with major developmental transitions: the transition from childhood to adolescence and the transition from adolescence to young adulthood. This study focused on the nature of change in early adolescence and the relationship of that change to adjustment or problem behavior 4 years later. School achievement, self-image, and problem behavior were assessed for 254 adolescents who participated in a longitudinal study conducted when they were in grades six through eight. Respondents (N=154) were followed up 4 years later when they were in their last year of high school. The results revealed that achievement patterns in early adolescence significantly predicted 12th grade achievement. The developmental pattern of school achievement in early adolescence appeared to be more important than actual achievement level, at one point in time. The early adolescent achievement patterns, and achievement levels, were modestly related to self-image, both concurrently and longitudinally. Conventional problem behavior in 12th grade was unrelated to achievement or to self-image, either in early adolescence or concurrently at 12th grade. The results suggest that patterns of change during early adolescence in important behaviors such as school achievement have enduring relationships to subsequent behavior. (NB)

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ED293020

June 2, 1987

Coping with Adolescence: The Functions and Dysfunctions of Poor Achievement

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Presented in a symposium "Family and Peer Influences on Adolescent Problem Behavior" at the biennial meeting of the Society for Research in Child Development in Baltimore, MD, April 23-26, 1987.

We gratefully acknowledge the support of NIMH grant MH 30252/38142 to A. Petersen. We are also grateful to the adolescents and their parents as well as the entire research and support staff for their assistance.

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Adolescence may be conceptualized as a period of the life span that begins with and is terminated by two major developmental transitions (Petersen & Ebata, in press). The transition into adolescence, often called early adolescence, is characterized by change in every aspect of individual development, typically led by puberty (Petersen, 1987). Changes in every important social context are typical as well. This transition, therefore, is characterized by change. Learning to cope with change is a central task of much of adolescence, particularly in the earlier middle years.

The transition out of adolescence into adulthood, often called late adolescence, involves movement into adult family and work roles, in many cases placing constraints on the available choices. The entire period of adolescence is also colored by the anticipation of this transition, as adolescents begin to assess the opportunities available to them and begin to plan for the nature and timing of adult work and family roles.

In this presentation, we focus on the nature of change in early adolescence, and the relationship of this change to adjustment or problem behavior four years later, at the end of the middle adolescent years. We have not examined the effects of the late adolescent transition because

little variation exists at this stage among our sample in the nature and timing of the transitions to adult roles. As young adolescents, almost all young people in our sample anticipated attending college. As seniors, all students in our follow-up sample reported planning to attend college.

Our focus in this research has been on the development of mental health, conceptualized as including functioning in the school, family, and peer contexts, as well as self-functioning from both clinical and normative developmental perspectives. Because our sample was college-bound and intellectually talented--with an average IQ of 115, we chose to focus on poor achievement as a problem behavior, considered to be a measure of poor mental health in our conceptualization. Those who achieved within the lower third of the distribution were considered to be at risk for mental health difficulties because of likely unfavorable peer comparisons and because they were less likely to be as successful in obtaining access to higher educational opportunities, thus foreclosing some routes to adult roles. We did not focus in our study of early adolescent development on conventional indicators of problem behavior, such as drug use, alcohol use, or sexual behavior; we have measured some of these behaviors in our follow-up study.

Previous analyses of our data have suggested that there is divergence in developmental pathways among young adolescents as a result of all the change experienced at this time (e.g., Ebata & Petersen, 1986; Petersen & Ebata, 1986). We believe that the slope of the developmental pattern for a particular construct--for example, whether it is heading upward, downward, or at a constant level--is important, in addition to the level indicated by the pattern. We reason that slope of the

developmental pattern or trajectory reflects the extent to which the adolescent is coping with the challenges of the period; those who are coping well are able to transform the challenges into growth-stimulating experiences whereas those unable to cope well experience cumulative distress and problems.

In considering the particular example of achievement, successful achievement (i.e., higher grades) presumably indexes learning as well as provides concrete feedback to the individual and others about the accomplishment. This system of feedback should influence other measures of mental health as well, a hypothesis supported in previous analyses with one notable exception (Ebata & Petersen, 1986; Roberts et al., in preparation a). The exception to the hypothesis of positive linear relationships between achievement and mental health (as indicated by measures of self-image) is that high achieving girls apparently experience conflict beginning in the 7th grade between achievement and social goals for popularity. Their self-image goes up when their achievement, especially in courses such as mathematics and science, drops to average levels (Roberts et al., in preparation b). Further analyses suggest that the achievement decline is functional for those girls to whom popularity is more important than school achievement.

Our hypotheses, then, were that both achievement level and achievement pattern during early adolescence would predict achievement level and other aspects of mental health in the last year of high school. For these analyses, self-image was used as the index of mental health. We also examined some conventional problem behaviors relative to school achievement and self-image.

Methods

Design and Sample

To examine the development of mental health over adolescence, the design of the larger study, on which the present one is based, was cohort-sequential longitudinal (e.g., Baltes, 1968; Schaie, 1965). Random samples were drawn from two successive cohorts of sixth graders in two large, suburban, middle to upper-class, predominately white school districts. Elsewhere (Richardson et al., 1984) we have provided more detail on the demographic characteristics of these youngsters and their families.

The assessment design in early adolescence involved twice annual group testing and twice annual individual interviews from grades six through eight, or roughly ages 11 to 14 years. Parents were also interviewed and assessed. We followed up these adolescents and their families four years later, when the adolescents were in their last year of high school (about 17 years of age). The same constructs and, when appropriate, the same measures were used in the follow-up study.

Of the 335 subjects in the Early Adolescent Study, the 254 identified for the longitudinal sample were used as the base sample here. The longitudinal sample was present for at least 4 of 6 group assessments and for at least 4 of 6 interviews. Most subjects missed only one of these assessment times (see Schulenberg et al., 1984, for more discussion of the longitudinal sample). The longitudinal sample does not differ from the total sample on any measure. Of those in the longitudinal sample, 145 provided data for the present analyses in the follow-up study. (An additional 24 subjects participated in the follow-up study but were not included in the longitudinal sample.) The results given

below were run with both the longitudinal and follow-up samples, with differences only at a rate within chance expectations, and none appearing to indicate meaningful bias or difference.

Measures

School achievement. The measure of school achievement used in the present analysis was course grades obtained from school records. Course grades were obtained for five courses for each marking period; these courses were Mathematics, Science, Social Studies, Literature, and Language Arts, with overall grade-point average for the year calculated from these subjects. In the follow-up study we used self-reports of school achievement, found in previous research of ours (Crockett et al., 1987) and that of others (e.g., Baird, 1976) to correlate highly with actual grades.

Self-image. The Self-Image Questionnaire for Young Adolescents (SIQYA: Petersen et al., 1984) was used to assess nine aspects of self-perception. Three scales assessed self-image relative to important social contexts: Peer Relations, Family Relations, and Vocational/Educational Goals; six scales tapped self-image relative to individual domains: Impulse Control, Emotional Tone, Body Image, Mastery and Coping, Psychopathology, and Superior Adjustment. These scales have high reliability and validity (see Petersen et al., 1984). The 98 items comprising the scales involve self-statements requiring response with a six-level Likert scale.

Problem behavior. Conventional problem behavior was assessed systematically only in the follow-up study. Two measures were used, self-reported behavior subscales from the Primary Prevention Awareness Attitudes and Usage Scale (PPAAUS; Swisher, 1982) and the Youth

Self-Report form of the Child Behavior Checklist (Achenbach & Edelbrock, 1983). This presentation reports only on results from the former instrument. The behavior subscales from the PPAAUS asks for frequency of both positive (e.g., helping a friend, donating money) and negative (e.g., taken things from store, cheated on a test, been drunk) behaviors on a 5-point response scale. Only the negative items were used in the present analysis. The scale has shown adequate reliability and validity in several samples of high school students. We created three indexes to examine here: (1) the original negative items, (2) the original negative items plus some additional ones, and (3) only the drug and alcohol items.

Results

Early Adolescent Achievement Pattern

The patterns of change in overall grade-point average from sixth grade through eighth grade were analyzed using trichotomous classifications at each grade; the bottom third were labelled "Low," the middle third were labelled "Average," and the top third were labelled "High." Seven distinct longitudinal patterns were identified that classified all but 8 subjects. These patterns included three that involved stability at each level: (1) increase from low levels, (2) decreases from high levels, and (3) increases and decreases from average levels. The frequencies of young adolescents in each pattern are shown in Table 1. Thus 64% of the adolescents stayed with the same third of the distribution while 17% increased and 17% decreased over early adolescence.

Insert Table 1 about here

Longitudinal Effects

The correlations between 8th and 12th grade achievement were .49 for boys and .46 for girls. The mean grade-point averages (GPAs) by sex and 8th grade achievement level are shown in Table 2. In a sex by 8th grade achievement levels ANOVA, there was no significant interaction, but both main effects were significant (level: $F(2,136)=15.41$, $p\leq.001$; sex: $F(1,136)=3.82$, $p=.05$). As would be expected, 12th grade school achievement was highest for high, then average, followed by low 8th grade achievers, with each of these groups significantly different. The direction of the significant sex differences in achievement in early adolescence was for higher achievement for girls (Kavrell & Petersen, 1985; Schulenberg et al., 1984). In contrast, the significant differences in the 12th grade favored boys. At some point between the 8th and 12th grades, the achievement trends crossed. The average trends for early adolescent achievement change suggested declines; the present result indicates faster grade decline over adolescence for girls than for boys.

Insert Table 2 about here

Achievement pattern in early adolescence also significantly predicted 12th grade achievement. These results are presented in Table 3. Several interesting findings were obtained. First, there was no gender or interaction effect but there was a highly significant main effect for early adolescent achievement pattern. Second, the stable levels of achievement over early adolescence were predictive of levels at

follow up. Those who were high over early adolescence were at the highest level in 12th grade (7th of 7 categories), those who were average over early adolescence in the middle of the 12th grade categories (4th of 7 categories), and those who were low over early adolescence at the bottom in 12th grade (1st of 7 categories). Third, the slope of the achievement change pattern, rather than achievement level in 6th grade or 8th grades, predicted 12th grade achievement. That is, those who increased in achievement, whatever the initial level--low or average--were not different in 12th grade achievement from those who were high achievers during early adolescence. Similarly, those who decreased in achievement--from initially high or average levels--were not significantly different from those who stayed low during early adolescence.

Insert Table 3 about here

Achievement and Self-Image

The correlations between achievement and self-image were generally low to moderate in size and larger for concurrent measures (e.g., 8th grade GPA and SIQYA). Overall, however, the relationships between achievement and self-image appeared lower at 12th grade than in early adolescence. A few self-image scales stand out as being related to achievement more frequently: for boys, significant relationships were especially likely with the Family Relations and Vocational/Educational Goals scales; for girls, significant relationships were especially likely

with Superior Adjustment; and for both boys and girls, Mastery and Coping was frequently related.

When GPA level was treated as a categorical variable, sex by GPA MANOVAs on the SIQYA scores revealed significant effects only in 8th grade. At 8th grade, Impulse Control, Emotional Tone, Family Relations, Mastery and Coping, (Less) Psychopathology, and Superior Adjustment showed linear relationships with school achievement. Body Image showed a significant curvilinear effect with the highest self-image among those with average grades. Vocational/Educational Goals showed an interaction effect such that the relationship between self-image and school achievement was linear for boys but with the highest self-image among average achieving girls. At 12th grade, the significant univariate effects were linear for Body Image and Vocational/Educational Goals and curvilinear for Peer Relations with the highest self-image among average achievers.

The early adolescent achievement patterns, like achievement levels, were also modestly related to self-image, both concurrently and longitudinally. A comparison of the percent variance contributed at grades 6, 8, and 12 suggests that early adolescent achievement may increase in explanatory power over adolescence (see Figure 1). Interestingly, the magnitude of self-image scores was typically arrayed in an order similar to that seen with 12th grade achievement. Three 8th grade self-image scales were significantly related to the early adolescent achievement pattern: Emotional Tone, Mastery and Coping, and Superior Adjustment. In all three, the stable groups were ordered such that: high stable achievement was greater than average which was greater than low stable achievement in early adolescence. In addition, the

increasers were usually similar to the stable high group and the decreasers were most similar to the stable low groups. The high-decrease group showed a significant sex difference in all three cases: boys were more like the stable-low group while girls were more like the stable-high group in self-image, with the highest self-image of any group. This result fits with the results we mentioned earlier: girls whose achievement declines from high levels have higher self-image. The pattern of effects at 12th grade was similar to that obtained in early adolescence, except that those whose achievement increased from low levels in early adolescence were highest in self-image by 12th grade.

Insert Figure 1 about here

Problem Behavior

There were no sex differences in reports of problem behaviors in 12th grade. In general, few negative behaviors were reported, except drug and alcohol use. The three problem behavior indexes were negatively related to 12th grade school achievement but with low and generally nonsignificant correlations (r = -.20 to -.33 for boys and r =.08 to -.15 for girls). Consistent with these correlations, a three-level categorical variable created from 12th grade GPA accounted for only 2% to 6% of the variance in the three problem behavior indexes. In contrast, the variance accounted for by early adolescent achievement pattern on conventional problem behaviors at 12th grade ranged from 11% to 14%; nevertheless, there was no significant main effect of pattern. There was one significant sex by pattern interaction on drug/alcohol use. A plot

of the interaction revealed much greater drug use among boys whose achievement decreased from average to low levels during early adolescence. Getting into trouble at school (i.e., mild delinquency) was significantly related to problem behavior, accounting for 27% of the variance.

Problem behavior at 12th grade showed similarly low but usually negative correlations with self-image. Interestingly, the median correlation with drug/alcohol use was .10 for boys but -.10 for girls. In general, relative to the other problem behavior scores, drug/alcohol use showed the smallest negative and sometimes positive correlations with self-image, especially for boys; this result suggests that drug and alcohol use in our sample is not related to poor self-image. Of the self-image scales, Family Relations and Impulse Control showed the strongest negative relationships with problem behavior for both boys and girls.

Discussion

These results suggest several important conclusions about the effects of the developmental transition at early adolescence and the longitudinal relationship between achievement and self-image.

First, the <u>developmental pattern</u> of school achievement in early adolescence appears to be more important than actual achievement level, at one point in time. Six percent more variance in 12th grade achievement was accounted for by achievement pattern than by 8th grade achievement (27% vs. 21%). Further analyses are needed to more directly test this claim but the analyses presented here suggest that whether achievement increased or decreased relative to averages at each grade is an important predictor of achievement by the end of high school. Those

who increased in achievement during early adolescence were not different in 12th grade achievement from those who began high and stayed there. Conversely, those whose achievement declined over early adolescence, from whatever initial level, were not different by 12th grade from those whose achievement had remained low over early adolescence.

Second, achievement pattern and level are also related to self-image, particularly concurrently in early adolescence but also longitudinally to the end of high school. The scales most strongly related to achievement were mastery and coping, family relationships, vocational/educational goals, and superior adjustment.

Third, conventional problem behavior in 12th grade was unrelated to achievement or self-image, in early adolescence or concurrently at 12th grade. In our sample, levels of problem behavior were low, except for drug and alcohol use, which attained expectable levels among high school seniors.

Thus, patterns of change during early adolescence in important behaviors such as school achievement have enduring relationships to subsequent behavior. Particularly those who get on downward developmental trajectories during early adolescence appear to have difficulty recovering over the high school years. Conversely, those who were already doing well or who enhanced their functioning during early adolescence appear to gain in strength over the higher school years.

The lack of association between conventional problem behavior and school achievement or self-image is consistent with the perspective that the reported levels of such behavior--primarily alcohol and mild drug use--are quite normative and unrelated to manifestations of problems. Further analyses of these relationships should be more illuminating.

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Table 1

Patterns of GPA Changes from Grades 6 to 8

Pattern	Frequency	% of Total
1. Stay Low	58	(23.58)
2. Stay Average	50	(20.33)
3. Stay High	54	(21.95)
4. Low Increase	29	(11.79)
5. Average Increase	14	(5.69)
6. Average Decrease	24	(9.76)
7. High Decrease	17	(6.91)

Note: Eight subjects could not be classified.

Test of sex differences in pattern was not significant, $L^2[6]=3.15$, $p=.79$.

Table 2

12th Grade GPA by 8th Grade GPA Level and Sex

8th Grade GPA Level	Boys $\bar{X}$	Girls $\bar{X}$	Total $\bar{X}$
High	4.41	4.37	4.39
Average	4.26	4.00	4.13
Low	3.95	3.79	3.86
Total	4.20	4.05	

GPA Level Significant Effects $F(2,136) = 15.41$, $p < .001$;

High > Average > Low

Sex $F(1,136) = 3.82$, $p = .05$, Boys > Girls

Note: 67 Boys and 75 Girls; 8th grade GPA level was trichotomized to form the three categories.

Table 3

12th Grade GPA by Early Adolescent GPA Pattern

Early Adolescent Pattern	n	12th Grade Mean GPA
Stay High	32	4.45
Ave - Increase	9	4.36
Low - Increase	15	4.20
Stay - Ave	28	4.09
High - Decrease	10	4.07
Ave - Decrease	17	3.90
Stay - Low	29	3.79

Note: Model $F(13,126) = 3.58$, $p < .001$, $R^2 = .27$

Pattern $F(6,126) = 6.22$, $p < .001$